



SEPARATION
**FOR EASY
HYGIENIC DRYING**

GOUDA DRUM DRYER

ANDRITZ

ENGINEERED SUCCESS



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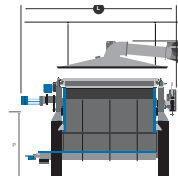
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The ultimate drying drum for your process

Products have been dried industrially for more than a century. Since its early years, ANDRITZ Gouda has specialized in industrial processing lines.



Cereal based baby/infant food

For easy, hygienic drying of everything from baby/ infant food to toxic materials, ANDRITZ Gouda is with you every step of the process. Product treatment before and after drying receives our equal attention. From kitchen preparation through to mill sifting and pneumatic transport, we can offer practical solutions as well as access to a wealth of informed research.

Drum drying is a continuous indirect drying method. Products are dried by spreading them in a thin and uniform layer onto the heated surface. Due to the kneading effect of the applicator system and to the scraped heat exchange surface, the dryer is unique for the drying of viscous, pasty, and sticky materials. Due to the short retention time of the product at high temperature, virtually no heat damage will occur. Contrary to the direct drying method, which uses hot air for evaporation, the drum dryer does not need any dust separation.

The thermal efficiency is favorable, whilst no heat is wasted in the largest volumes of exhaust air. A very thin layer of the product to be dried is applied to the outside of a rotating cylinder (drum). This drum is heated on the inside by means of steam. When in contact with the heated surface, the liquid will evaporate from the thin layer very quickly. After an almost complete rotation of the drum, the remaining dried product is scraped off the drum surface in the form of a film or as a powder. A special composition of cast iron gives the drum a combination of favorable properties: very accurate shape retention even at high steam pressure and temperature, and excellent "scraping properties" for the scraping knife. Steam heating gives uniform temperature distribution over the drum surface, and this results in a consistent product quality. The steam condenses on the inside of the drying drum. The condensate is removed continuously from the drum to make the largest possible surface area available on the inside of the drum for condensation of the steam. The steam system is a closed system, which means that the product cannot come into contact with the steam or condensate.

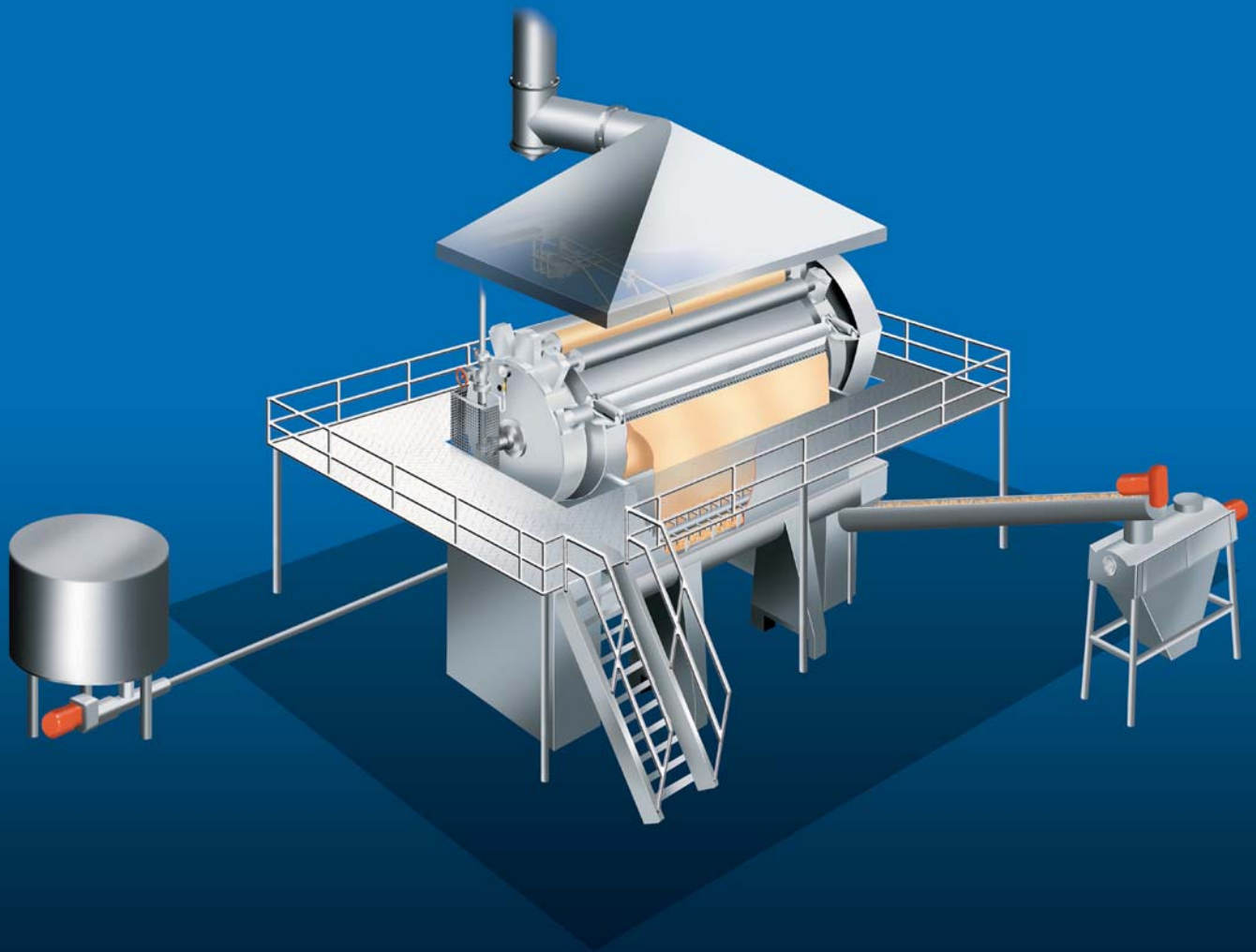


Drum dryer construction

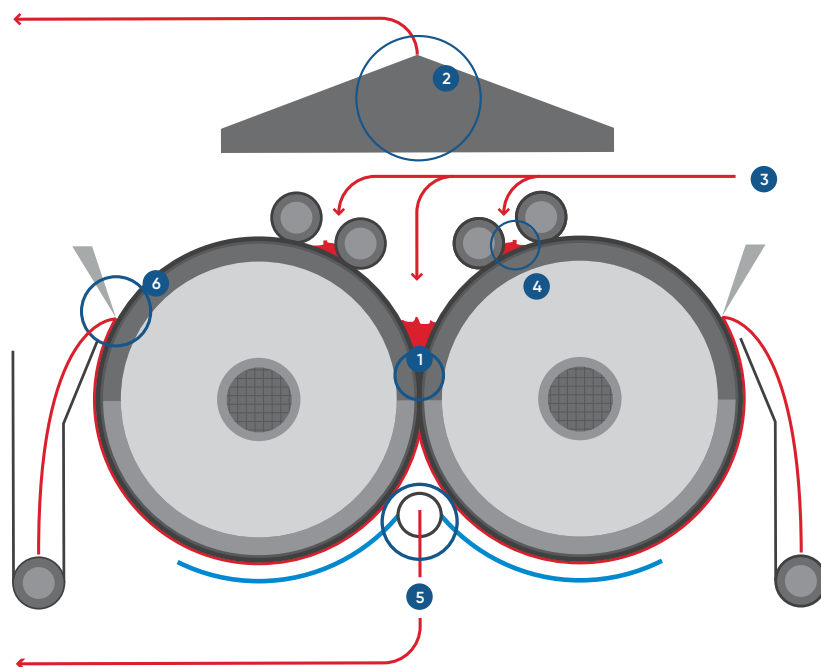
Drum drying is an environmentally friendly drying method. There is hardly any dust emission, as only a relatively small amount of air is removed by suction. The maximum specified dust emission values can be obtained without complicated filter installations. Energy recovery and smell abatement are possible. The compact drum dryer leaves an interestingly small financial footprint. A relatively low investment in building and installation is required compared to other drying technologies. Drying can be an expensive part of the production process. With the ANDRITZ Gouda drum dryer, however, running costs can be significantly lower. Its high thermal efficiency translates to steam consumption of approx. 1.4 kg for each kilogram of water evaporated. Useful energy can even be recovered as it exits the system.

YOUR BENEFITS

- Highest hygienic standard
- Low energy consumption
- High thermal efficiency
- A long, continuous life cycle



Drum dryer construction

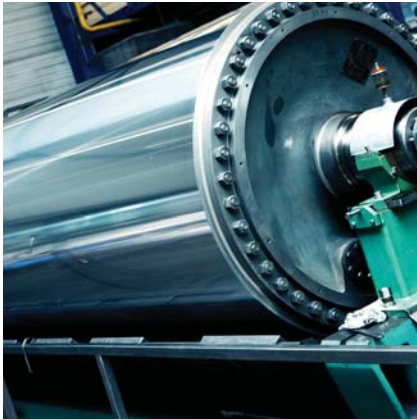


Instrumentation and control

- 1 Gap adjustment 2 GRV Vapor Hood 3 Variable speed applicator rolls 4 End plate material
- 5 Undersuction system 6 Stainless steel clad knife holder

Equipment: The keys to the system

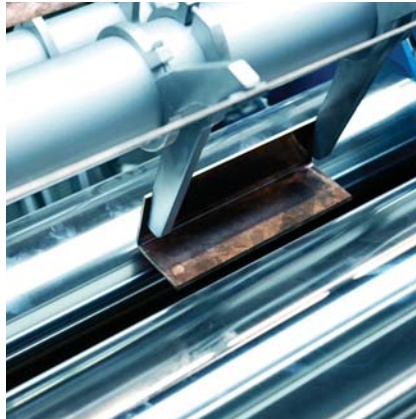
The pure geometry of the drum creates the perfect heat exchange surface. Indeed the concepts of strength and simplicity are incorporated throughout the ANDRITZ Gouda design. And while cleaning industrial equipment might never be a joy, care in construction makes the necessary tasks as painless as possible.



THE ULTIMATE DRYING DRUM

Designing a pressure vessel to satisfy stringent production, quality, and safety parameters is not a role for the faint-hearted. In ANDRITZ Gouda's experience, only cast iron of a special composition can ensure high quality drum drying. Its uniform hardness and homogenous structure equip the drum to withstand high temperatures and inner pressure with unflinching accuracy, whatever the prevailing operating conditions.

Also, chromium plating of the cast iron drum can be supplied for hygienic requirements or corrosive protection of the drum for certain applications. ANDRITZ Gouda drum cylinders are not just built for strength. They are machined both inside and out for smoothest action. A highly accurate curve and wall thickness ensure exceptionally consistent heat transfer.



AN ADAPTABLE FEED

Regular product distribution is the first essential within a controlled drying process. ANDRITZ Gouda can supply a wide range of fixed or transferring feed systems to suit particular product and viscosity types.

DRIVE

ANDRITZ Gouda supplies a variable speed drive as part of the process control system. This drive can be provided with an explosion-proof motor and is built up furthermore using tested standard components from reputable manufacturers. The choice can be made in consultation with the customer.

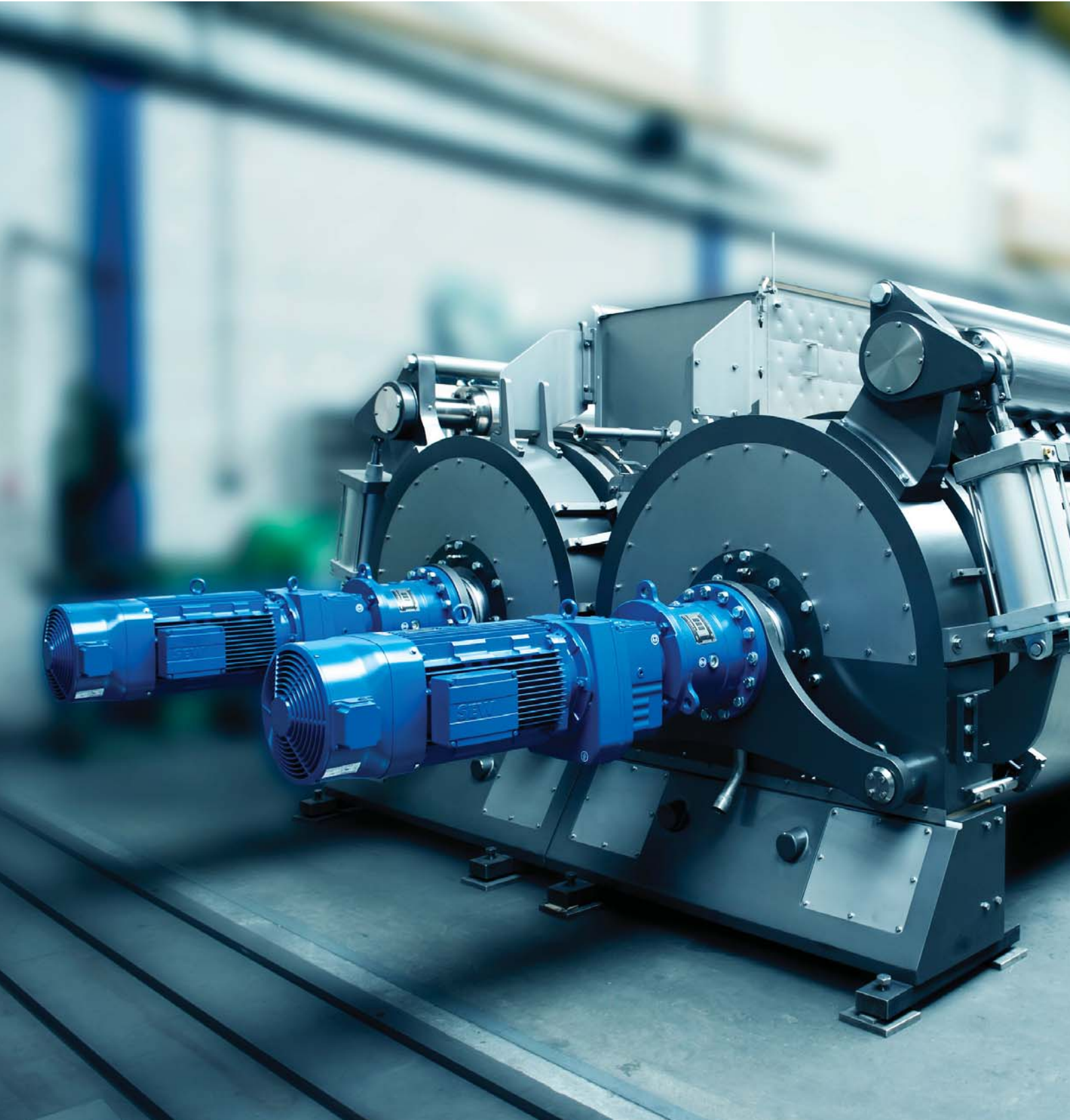


RECOVERY THAT'S PURE AND SIMPLE

The cast iron construction of the dryer's scraper assembly guarantees uniform pressure over the full length of the drum, and further serves to eliminate vibration. Knife pressure can be controlled hydraulically. Dried product is recovered as film or powder into a special screw conveyor, complete with pre-flaking capability, enabling the output to be transported easily. A special adaptation of the recovery system is available for handling thermoplastic products.

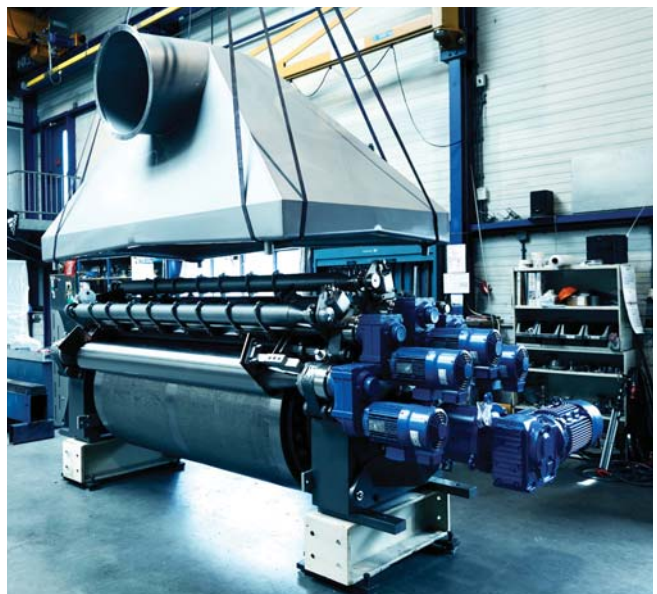


Visual impressions of the **ANDRITZ Gouda drum dryer**





Special design drum dryer



Drum dryer with vapor hood



Soya flakes

Various designs for different operating principles

Precision-engineered for ultimate stability, ANDRITZ Gouda dryers are equipped for a long, uninterrupted life-cycle.

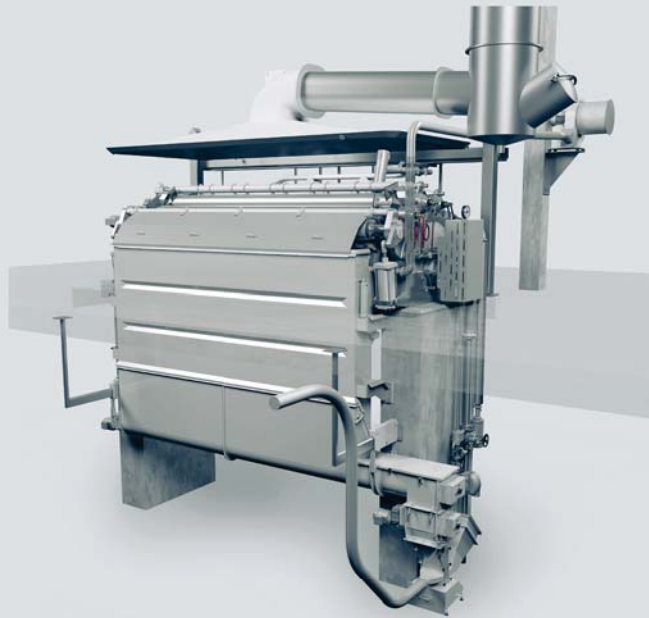


Building a reputation for quality means using highly specified materials and components. Special, completely closed alloy castings for optimal heat transfer, vapor hood tracing, special bearings, are all standard. ANDRITZ Gouda's quality assurance includes certification by ASME, TÜV, European PED, and CE. Depending on the design, the product is applied continuously as a thin film at the bottom or on top of the main drum. As the drum rotates and is heated on the inside, the product dries on the outside of the drum surface. The brief exposure to a high temperature reduces the risk of damage to the product. The construction of the knife holder guarantees even pressure over the entire length of the drum. The

use of specific materials prevents vibrations as a result of scraping and guarantees uniform product removal. The pressure of the knife can be controlled simply and outside of the process area.



Single drum dryer

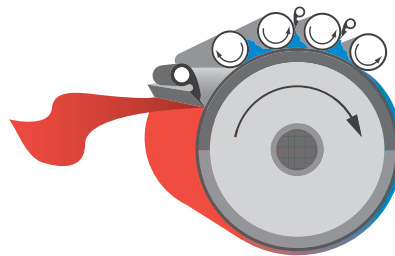


On the single drum dryer, the wet product is fed to the dryer by means of applicator rolls.

Depending on the number of applicator rolls used, the layer formed on the drying drum can be thicker or thinner. The special construction of this dryer makes it particularly suitable for processing pasty or pulpy products. This is due to the applicator system, which ensures perfect distribution of the product along the full length of the drum. In addition, the kneading effect of the rolls, prevent sticky products from forming lumps.

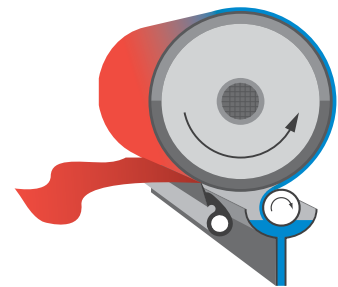
DRUM DRYER WITH APPLICATOR ROLLS

The applicator rolls make it easy to regulate product feed. In addition, they have a kneading effect, preventing lump formation in stickier materials. With perfect distribution along the length of the drum, the system is ideal for processing pasty or pulpy products.

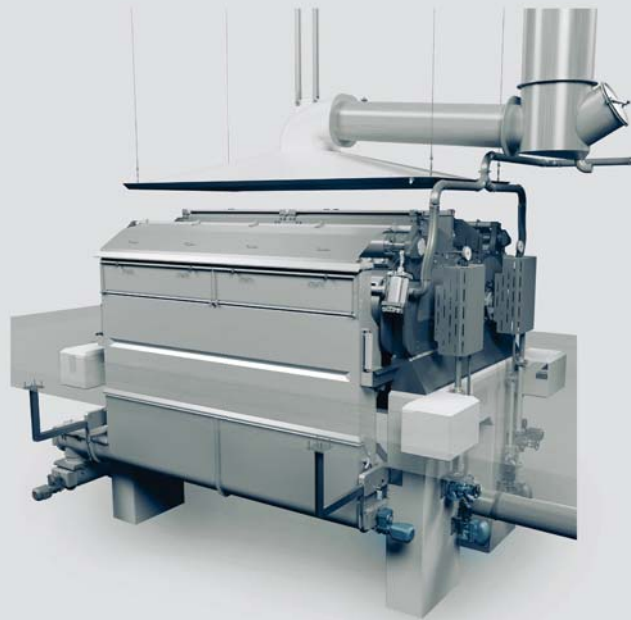


DRUM DRYER WITH BOTTOM DIP ROLL

A version designed for specific applications and chemicals. In this machine, the roll sits underneath and dips into the product, picking up a liquid layer for transfer to the drum – similar to a printing press.



Double drum dryer



A double drum dryer provides additional capability.

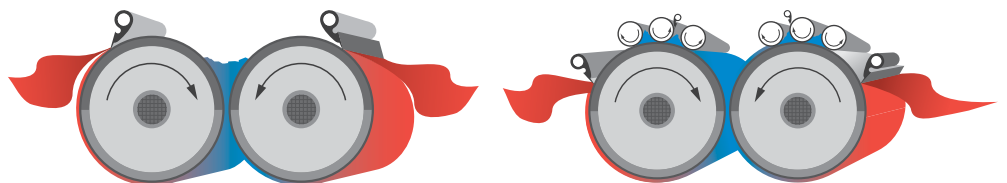
A double drum dryer is often used for products with lower viscosities. The product is fed into the sump between the two drums. The distance between the drums can be adjusted accurately to control the layer thickness on the drums. In addition, applicator rolls can be used. This machine can also be used as two single drum dryers with overhead applicator rolls.

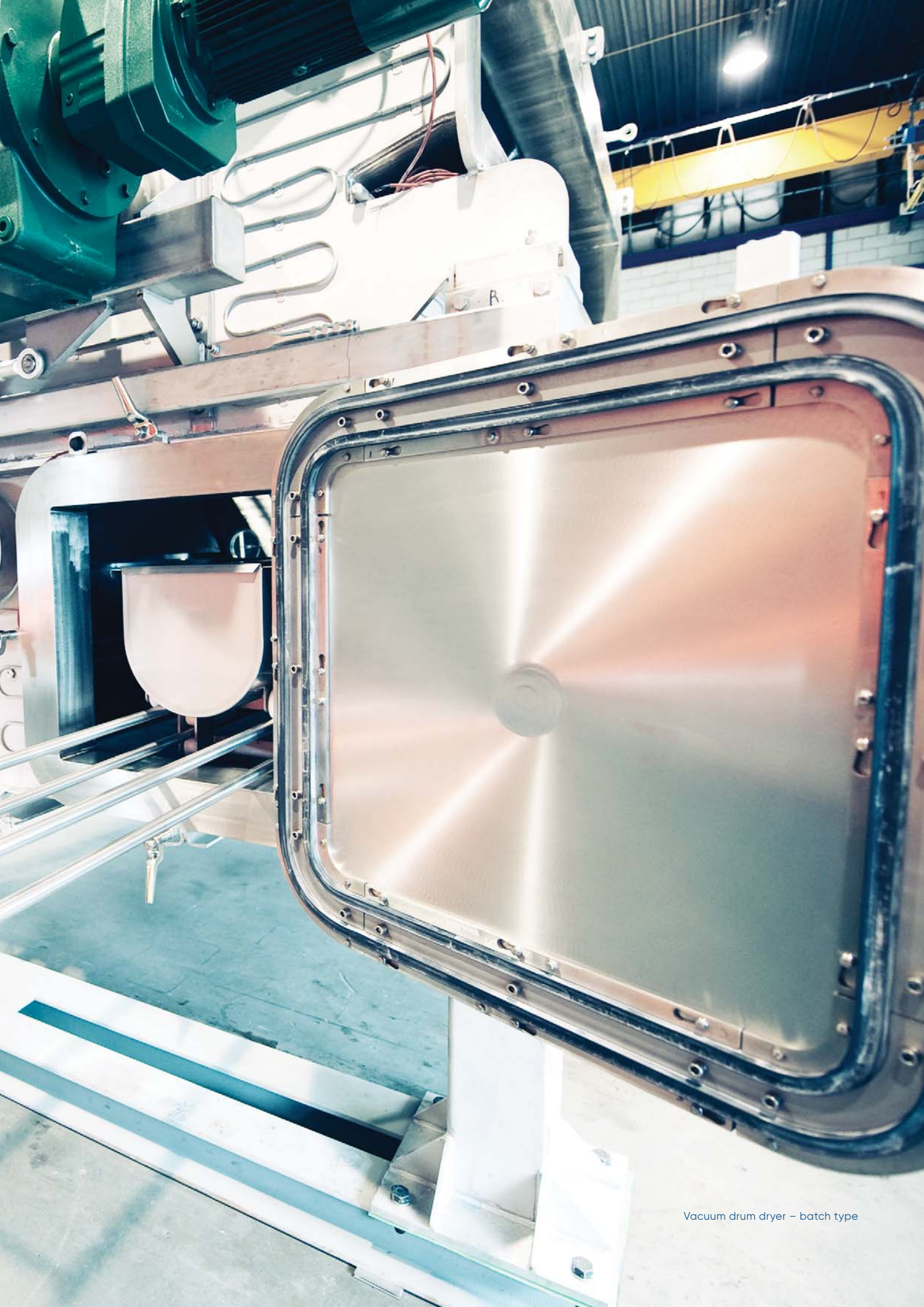
DOUBLE DRUM DRYER

With this system, product is fed into the nip between a pair of drums (which always rotate in opposite directions). This small gap between the drums is finely adjustable to optimize the film thickness.

DOUBLE DRUM DRYER WITH APPLICATOR ROLLS

The double drum dryer with applicator rolls is suitable for customers with more variables in their product range. This multi-functional setup offers the greatest versatility – combining the advantages of both the single and double drum dryer systems

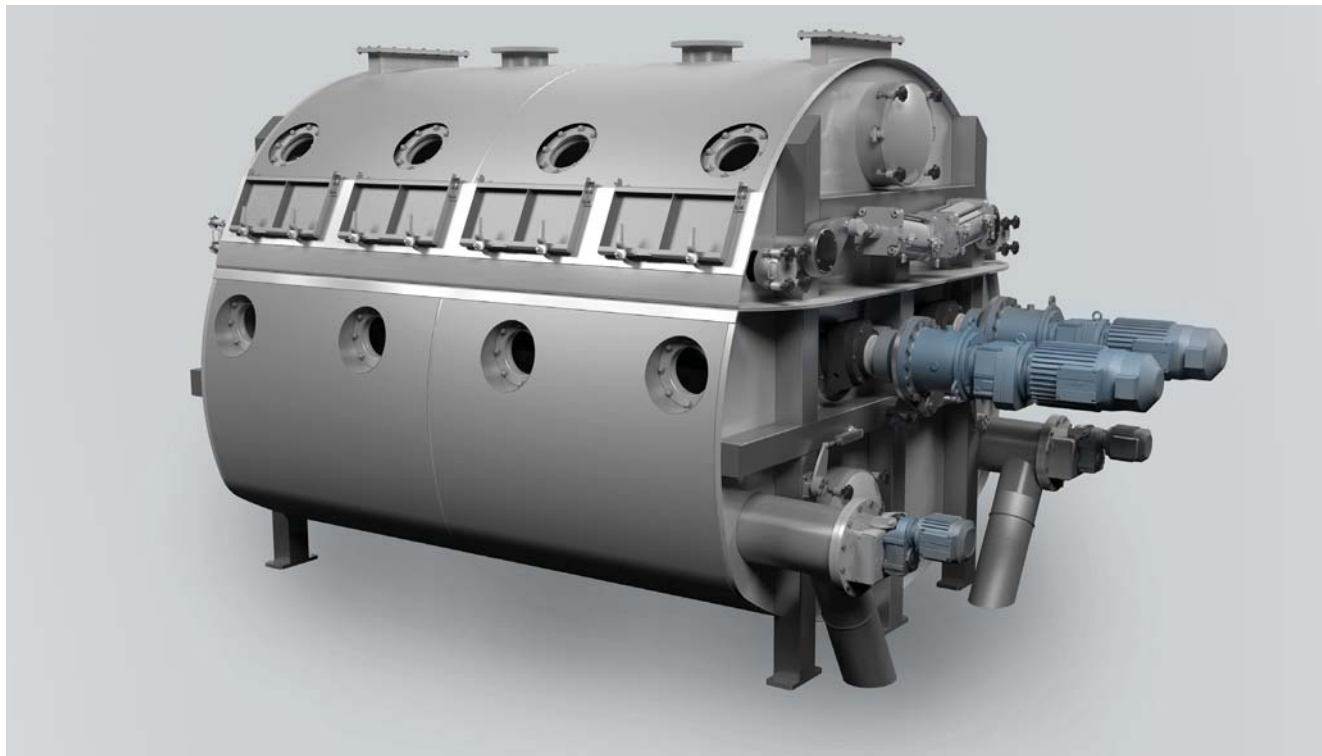




Vacuum drum dryer – batch type

Vacuum drum dryer

Heat sensitive? Cool-running vacuum drum dryers and double drum dryers.



Enables drying at low temperatures, thus avoiding damage to heat-sensitive product components. freedom from atmospheric contamination and independence from climatic conditions, operating results are always uniform. Moreover, these dryers can be used for recovery of solvents by collecting the vapors forming during the drying process. Double vacuum dryers offer larger capacity and, lower production costs. Two steam-heated drums revolve in a hermetically sealed casing under strong vacuum. Liquid is fed in between the rolls, dried, and scraped off before the drums have completed a single rotation.

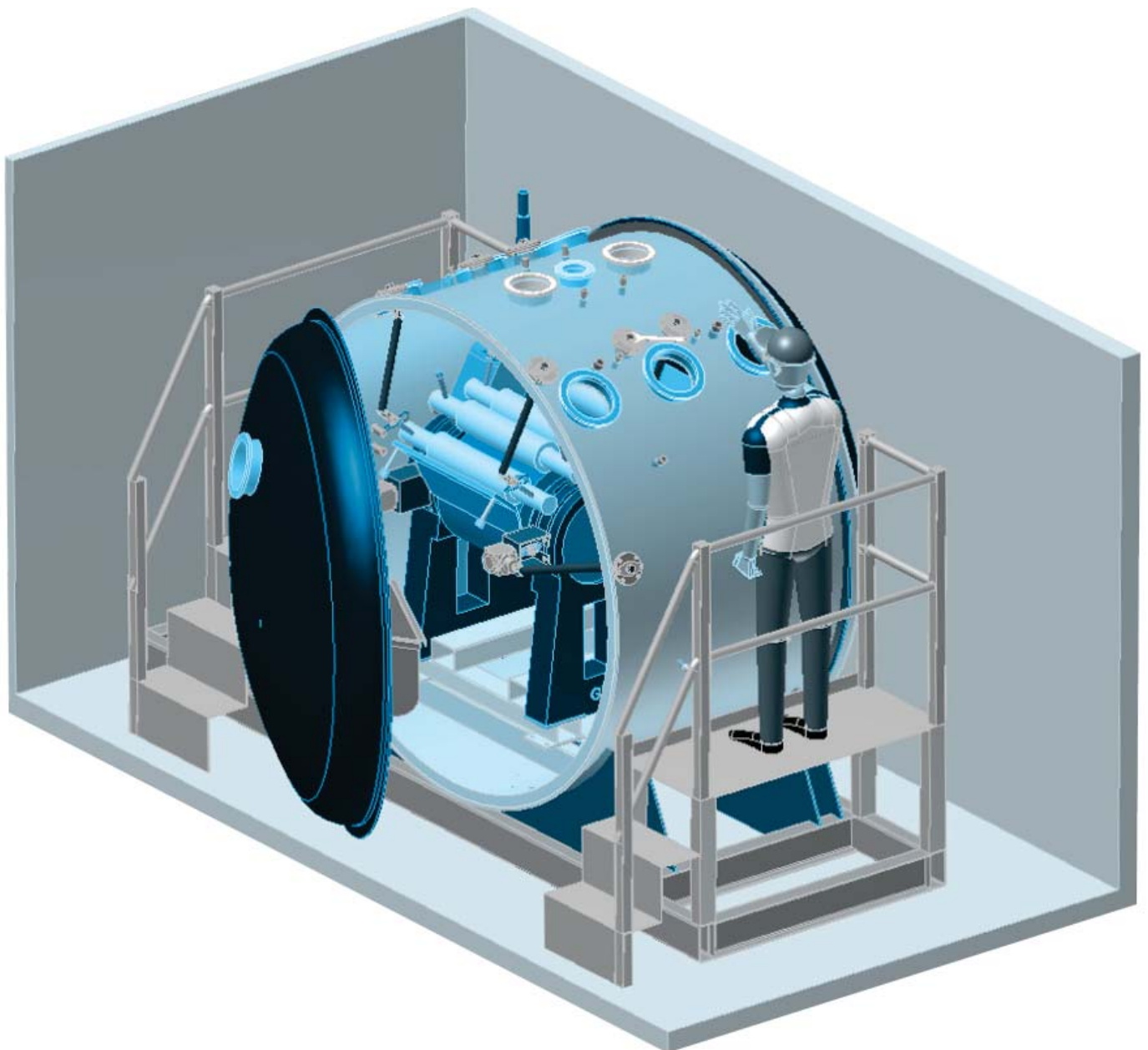
The vacuum dryers are very hygienic. There is no recirculation of material, no waste is produced, and the drum is accessible for thorough cleaning. Since operation is totally independent of climatic conditions, results are always the same.

FOOD PRODUCTS MAY BENEFIT ESPECIALLY

- Swift evaporation without risk of oxidation
- Enzymes and vitamins are preserved
- Coagulation of proteins is prevented
- Highly soluble end product

Research and development – Realizing the future vision

Research and development has been the cornerstone of ANDRITZ Gouda's success. The R&D activities are carried out in close co-operation with clients and focus on the feasibility of a desired process or product.



Developing a vacuum dryer

ANDRITZ Gouda is implementing future standards, today. Making better, cleaner, more complete dryers, with stainless steel parts made of the best grade. Designing systems with minimal energy exhaust and dust emission (no complicated filter installations required). And, of course, ensuring optimal hygiene throughout the process – machines that operate to HACCP/EHEDGE standards.

ENERGY-EFFICIENT, ENVIRONMENTALLY FRIENDLY

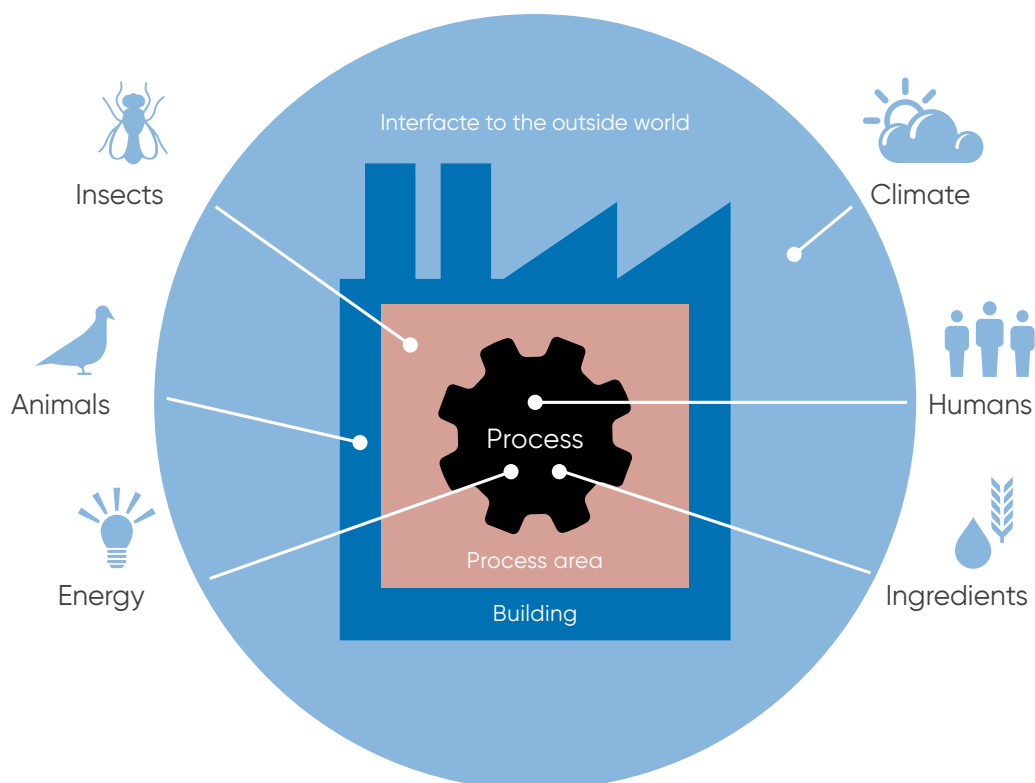
With the ANDRITZ Gouda drum dryer, running costs can be significantly lower than with other dryers. Its high thermal efficiency translates to steam consumption of approximately 1.4 kg for each kilogram of water evaporated. Useful energy can even be recovered as it exits the system. Drum drying is environmental friendly as well; there is hardly any dust emission, thus avoiding complicated filter installations and additional waste.

HYGIENE

Hygiene is especially important in food applications. In the design of the drum dryer, a clear distinction is made between the process section of the dryer and the mechanical parts. This, for instance, prevents the risk of contamination by lubricants (or contamination of the lubricants due to leakage of the product). It also improves the accessibility of parts for adjustment, inspection and maintenance.

INNOVATION AREAS OF THE DRUM DRYER ARE:

- Increasingly hygienic design
- Machine safety
- Maintenance aspects
- Product quality
- Energy savings/recovery
- Operator independence



The dryer's process area is separated from its mechanical components, thus eliminating the risk of contamination.



Food applications

ANDRITZ Gouda is implementing future standards today ensuring optimal hygiene throughout the process.



Specialized drum dryers for products based on milk, starch or cereals

The use of ANDRITZ Gouda dryers is not limited to the mere evaporation of water or solvents from a given product. In the case of certain nutritious substances for instance, there is also a ready-cooking effect in addition to drying and at which remarkable instant properties are obtained. Various world-famous instant foods are therefore made on ANDRITZ Gouda dryers. Food products may benefit especially from the vacuum drum dryer, which enables drying at low temperatures, avoiding damage to heat-sensitive product components. Evaporation occurs within seconds, without risk of oxidization.

Enzymes and vitamins are preserved, and the coagulation of proteins is prevented. And the final product – either in flake or powder form – is highly soluble, allowing rapid reconstitution to a liquid.

APPLICATIONS

- Cereal-based baby food
- Milk
- Cereal-based drinks
- Yeast
- Pre-gelatinized starch
- Gelatin
- Potatoes
- Fruit

ADVANTAGES

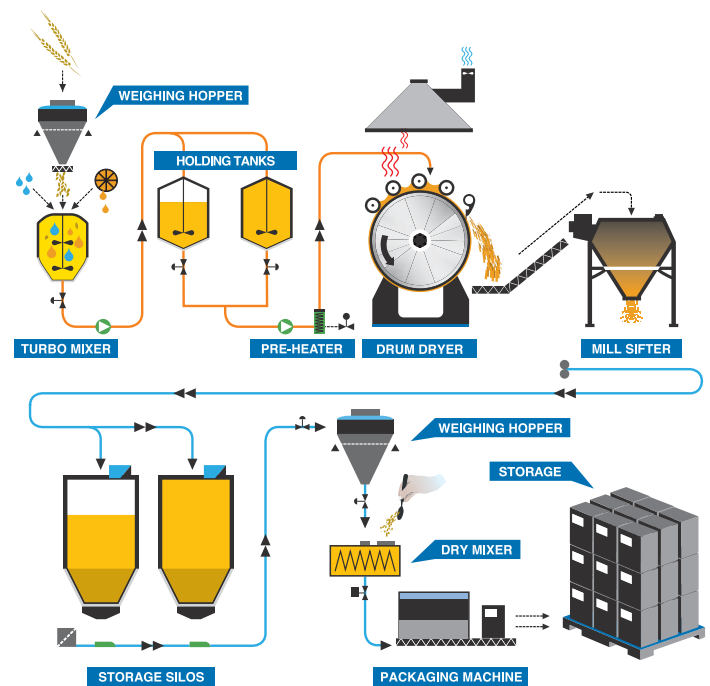
- Short residence time
- Vacuum options
- Continuous process

Food applications

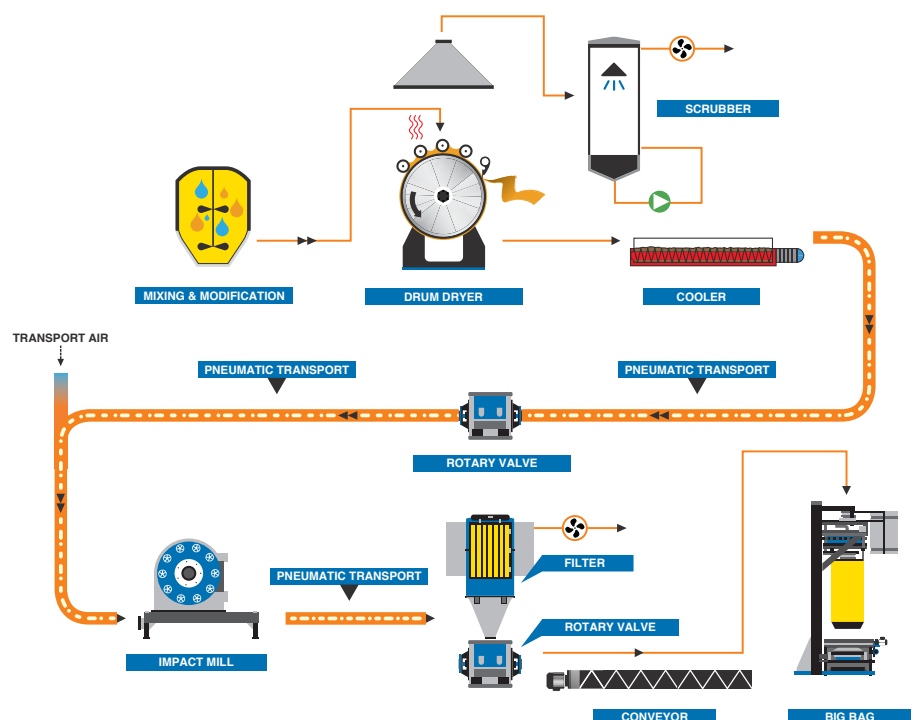
Turnkey solutions for various applications.

Although each production line must be specially designed, a modern processing line will include intake, weighing and mixing of raw materials, a drum drying section, a milling section, storage silos, and a section for composing and mixing the final formulae. Over the years, extensive knowledge has been gained on all kinds of production process possibilities and machines to obtain the final product characteristics.

BABY FOOD PROCESSING LINE



SOUR DOUGH PROCESSING LINE



Chemical and pharmaceutical applications

ANDRITZ Gouda not only produces a range of standardized machines, but also has wide experience in building special machines according to customers requirements.



End products based on drum-dried material

When it comes to tolerance, there can be no compromise. The durable construction of the ANDRITZ Gouda drum dryer makes light work of the most demanding operating conditions. The built-in accuracy of the system delivers correctly processed product, year after year. The single drum dryer with a bottom dip roll is a version designed for specific applications and chemicals. Since the drying characteristics of most products are not entirely predictable, we use pilot plant testing to select the most efficient machine model and size. For more than 90 years of continuous operation, ANDRITZ Gouda's pilot plant has tested and developed solutions for a huge variety of requirements. These results and the experience gathered are put to work for today's customer requirements.

APPLICATIONS

- Glue
- Pesticides
- Sodium benzoate
- Polymers
- Pigments
- Detergents
- Enzymes
- Proteins

ADVANTAGES

- Short residence time
- Vacuum options
- Continuous process



Soya sauce dried on a pilot machine

ANDRITZ Gouda pilot plant for reliable upscaling

Determining new process technology viability and success.

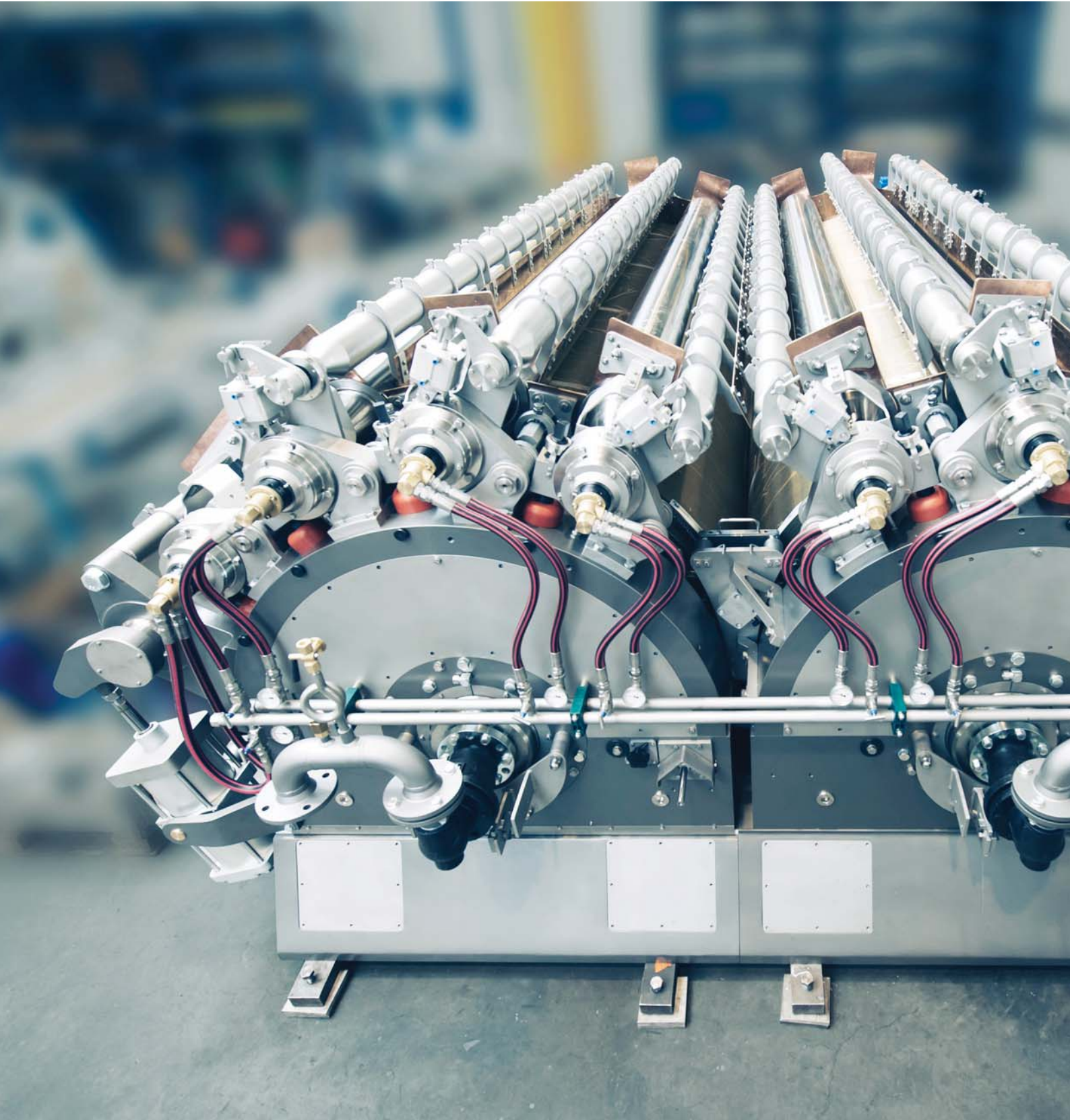


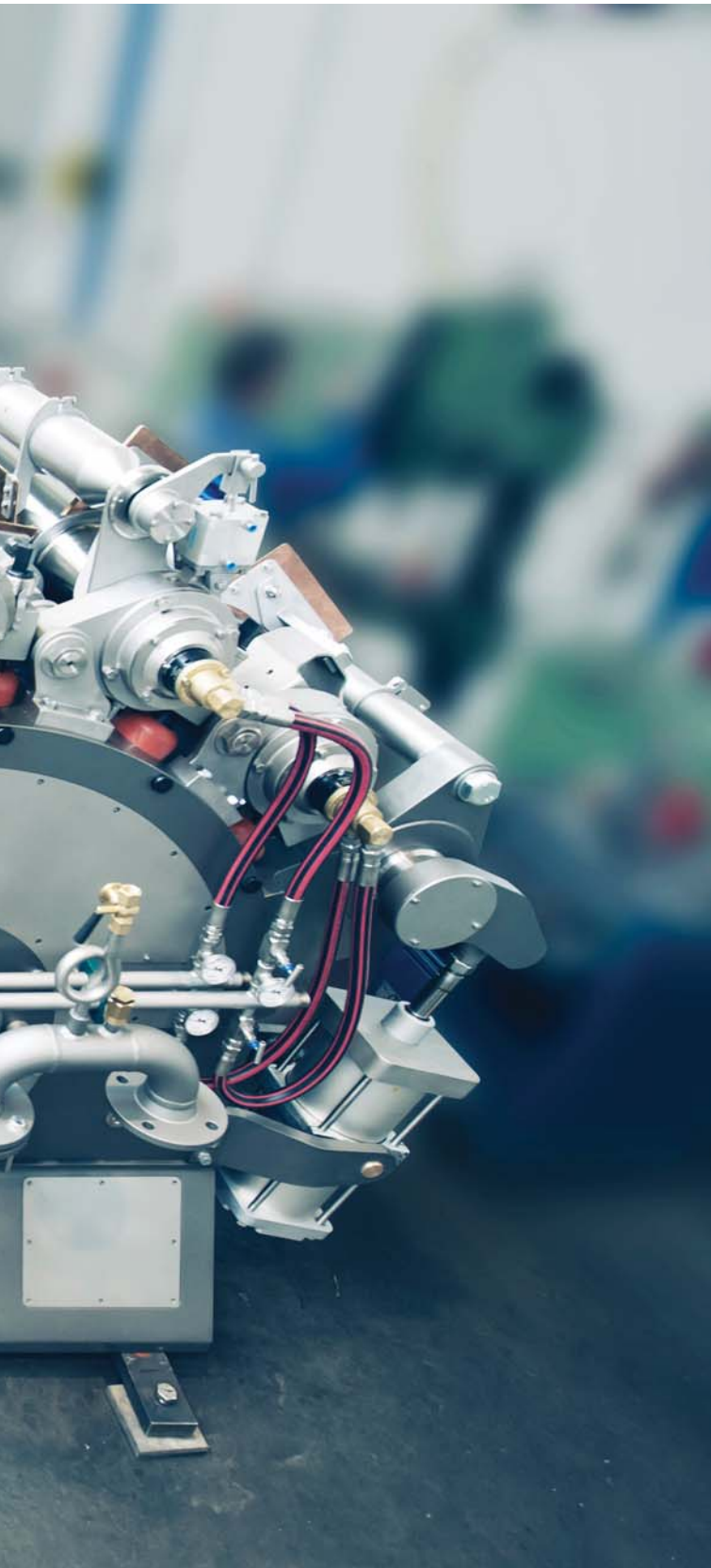
Our pilot plant

A unique feature and part of ANDRITZ Gouda's R&D program is the pilot plant. The pilot plant is a valuable test center for simulating production processes with a view to testing or optimization of a process before implementation. The pilot plant is also used to investigate the feasibility of a desired process. Combined with state-of-the-art manufacturing technologies, ANDRITZ Gouda offers an integrated approach

for the setup of food processing lines, contributing to significant cost saving (for the customer) on the production process. ANDRITZ Gouda has several pilot plants available to test new materials, generate design data, and provide representative product samples. The proven calculation model for scaling up to industrial size ensures successful application in real-life processing.

Visual impressions of the **ANDRITZ Gouda drum dryer**





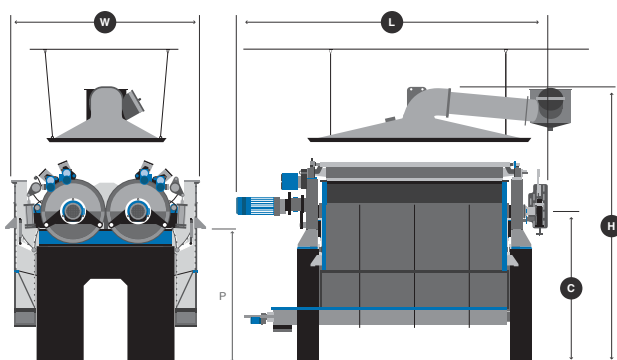
ANDRITZ Gouda single drum dryer



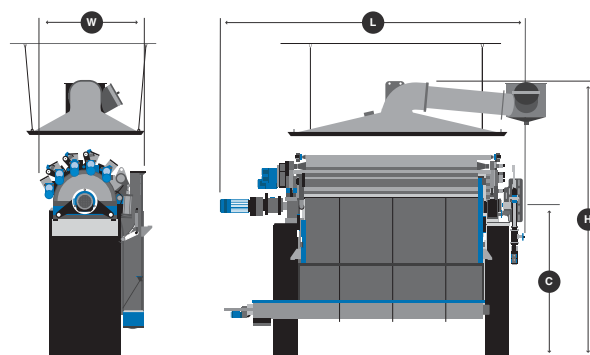
ANDRITZ Gouda single drum drive system

Dimensions and models

The ANDRITZ Gouda drum dryer comes in a variety of sizes, ranging from dryers with a drying surface area of 0.75 m² up to a dryer with 44 m².



Double drum dryer (T)



Single drum dryer (E and EP)

DOUBLE DRUM DRYER MODEL T

		5/5	5/10	10/10	10/20	10/30	10/30	15/40
Drying surface area	m ²	1.5	3.1	6.2	12.5	18.8	28.2	37.6
Drum diameter	mm	500	500	1,000	1,000	1,000	1,500	1,500
Drum length	mm	500	1,000	1,000	2,000	3,000	3,000	4,000
Number of applicator rolls	standard optional	0 2x2	0 2x2	0 2x2 or 2x3	0 2x2 or 2x3	0 2x2 or 2x3	0 2x2 or 2x3	4 5
Length** (L)	m	1.8	2.3	4.2	5.2	6.2	5.9	6.9
Width** (W)	m	1.9	1.9	3.3	3.3	3.3	4.3	4.3
Height** (H)	m	1.7	1.7	5.0	5.0	5.0	7.4	7.4
Platform height (P)	m			2.6	2.6	2.6	3.1	3.1
Drum heart line (C)	m	1.8	1.8	3.0	3.0	3.0	3.5	3.5
Speed range	rpm	depending on the application						
Drive power - total installed*	kW - min kW - max	4 7.5	5.5 7.5	8 35	15 35	22 43	37 100	44 100
Weight for foundation**	ton	1.4	2.6	11.9	16.1	20.1	49.8	54
Shipping weight**	net ton gross ton	2 2.2	2.6 2.9	9.8 10.4	12.6 13.6	15.4 16.8	40.8 42	48 50
Shipping volume**	m ³	7	9	20	26	32	40	47

SINGLE DRUM DRYER MODEL E

		5/5	5/10	10/10	10/20	10/30	10/30	10/40	20/40	20/45
Drying surface area	m ²	0.75	1.5	3.1	6.2	9.4	14.1	18.8	25.1	28.2
Drum diameter	mm	500	500	1,000	1,000	1,000	1,500	1,500	2,000	2,000
Drum length	mm	500	1,000	1,000	2,000	3,000	3,000	4,000	4,000	4,500
Number of applicator rolls	standard optional	4 N/A	4 N/A	4 N/A	4 N/A	4 N/A	4 5	4 5	4 5 or 6	4 5 or 6
Applicator roll diameter	mm	120	120	220	220	220	260	260	300	300
Length** (L)	m	1.5	2	3.2	4.2	5.2	5.4	6.4	8.3	8.8
Width** (W)	m	1.2	1.2	1.8	1.8	1.8	2.5	2.5	3	3
Height** (H)	m	3.1	3.1	5.6	5.6	5.6	7.6	7.6	6.5	6.5
Platform height (P)	m			2.6	2.6	2.6	3.1	3.1	3.1	3.1
Drum heart line (C)	m	1.4	1.4	3.0	3.0	3.0	3.5	3.5	3.5	3.5
Speed range	rpm	depending on the application								
Drive power - total installed*	kW - min	4	5.5	13	20	33	34	42	55	65
	kW - max	7.5	7.5	35	35	45	75	100	130	130
Weight for foundation**	ton	0.8	1.4	7.1	9.8	12.4	21	30	46	50
Shipping weight**	net ton	1.6	1.8	5.8	7.9	10	17.5	26.5	34	38
	gross ton	1.8	2.1	6	8.4	10.8	18.5	27.8	35	39
Shipping volume**	m ³	6	9	10	13	16	21	25	34	37

SINGLE DRUM DRYER MODEL EP (for potato flakes)

		15/30	15/40	15/52	20/52	20/62	20/72
Drying surface area	m ²	13.4	18.1	23.8	31.7	38.0	44.3
Drum diameter	mm	1,500	1,500	1,500	2,000	2,000	2,000
Drum length	mm	3,000	4,000	5,200	5,200	6,200	7,200
Number of applicator rolls		5	5	5	5	5	5
Applicator roll diameter	#1 & #5	260	260	260	260	260	450***
	#2 & #3 & #4	220	220	220	220	220	325
Length** (L)	m	5.0	6.0	7.2	7.2	8.2	9.2
Width** (W)	m	3.4	3.4	3.4	3.8	3.8	3.8
Height** (H)	m	6.5	6.5	6.5	6.8	6.8	6.8
Platform height (P)	m	2.6	2.6	2.6	2.9	2.9	2.9
Drum heart line (C)	m	3.0	3.0	3.0	3.0	3.0	3.0
Speed range*	rpm	2-10	2-10	2-10	2-10	2-10	2-10
Drive power	kW	11	11	15	18.5	18.5	33.5
Weight for foundation**	ton	21	30	39	58	59	60
Shipping weight**	net ton	17.5	26.5	36	48	56	42
	gross ton	18.5	27.8	37	50	48	45
Shipping volume**	m ³	21	25	37	65	74	75

* typical (depending on application) ** basic machine only incl. drives *** only last applicator roll #5





Installing a
drum dryer

Intelligence for machine and process control

Metris addIQ control systems

With Metris addIQ, you get a well-proven, intelligent control solution for industrial processes and machines. Our solid/liquid separation specialists use their in-depth expertise to provide scalable solutions that are individually tailored to regional and application requirements. Whether you're automating new equipment or upgrading to extend the lifecycle of existing systems, we find the ideal solution for you.

Our tailored turnkey systems from a single supplier can improve entire plants or individual machines. By providing state-of-the-art automation technologies and digitalization, we ensure best-in-class performance. Automating machine and plant equipment measurably reduces gaps in many different production process steps. By using automation from ANDRITZ, you can reduce downtime thanks to features such as predictive analysis that allow you to optimize productivity.

Metris addIQ covers all levels of automation, starting at basic automation (machine, process, and plant control), to upgrades, and add-ons for process optimization. Together, you get a full range of optimized solutions that help reduce maintenance efforts and ensure preventive service for your machines and plants. These are all delivered from a single source and always individually tailored to your business demands. Metris addIQ control systems are part of the ANDRITZ brand for Digital IIoT (Industrial Internet of Things) Solutions.





Put our 150 years of OEM experience to work for you

Need to optimize your process? Boost availability? Ensure non-stop productivity? When you work with ANDRITZ Separation, you gain access to one of the world's largest OEM manufacturers for solid/liquid separation. Put our in-depth knowledge of separation equipment and processing to work for you.

VAST EXPERIENCE THROUGH LARGE INSTALLED BASE

With an installed global base of more than 55,000 solid/liquid separation equipment and systems, you can imagine that we take service seriously. Wherever these customers are located, we work very closely with them to maximize uptime and boost efficiency.

WELL-KNOWN OEM BRANDS

Some customers know us as the people with ANDRITZ on our overalls. Others have come to understand that we are the OEM behind former brand names like 3Sys Technologies, Bird, Delkor Capital Equipment (Pty) Ltd., Escher Wyss dryers, Frautech, Guinard Centrifugation, KHD Humboldt Wedag, Krauss-Maffei centrifuges, dryers, and filters, Lenser, Netzsch Filtration, Rittershaus & Blecher, Royal GMF Gouda, Sprout Bauer, and Vandenbroek, companies who all have been acquired by ANDRITZ. But frankly, we are capable of servicing and supplying spare parts for nearly all brands of solid/liquid separation equipment on the market.

LOCAL SUPPORT BACKED BY GLOBAL EXPERTISE

Our service philosophy is simple: One phone call, one contact person, one dedicated team that speaks your language and knows your equipment and process. This is not an empty promise. It is backed by a network of 550 service specialists for separation equipment and systems as well as service centers all around the world.

A TRUE FULL-SERVICE PROVIDER

Whether you need spare parts, rentals, local service, repairs, upgrades, or modernization of your equipment, ANDRITZ Separation is your service specialist in all aspects of separation. From initial consulting through to service agreements, process optimization, and training programs, we are always looking for ways to minimize downtime and increase predictability in operations while raising your overall production efficiency. In short, we've got you covered.



LOCAL SUPPORT

Responsive local service centers and field service technicians



REPAIRS & UPGRADES

Optimization of machine and process performance, repair work, retrofitting, and modernization



SECOND-HAND & RENTALS

Certified second-hand and rental machines



TRAINING

Operator training and tailored seminars for operating and maintenance personnel



OEM SPARE PARTS

Filter cloths, spare and wear parts from OEMs or with OEM level quality, all readily available



SERVICE AGREEMENTS

Preventive maintenance, contracts for spare parts, maintenance, inspections, repairs, upgrades, operation, and equipment monitoring



PROCESS OPTIMIZATION

Automation tools and process expertise to boost your profit



LAB AND ON-SITE TESTS

Lab and testing capabilities for process optimization and machine upgrades





WHAT'S YOUR SEPARATION CHALLENGE?

ANDRITZ Separation is the world's leading separation specialist with the broadest technology portfolio and more than 2,000 specialists in 40 countries. For more than 150 years, we have been a driving force in the evolution of separation solutions and services for industries ranging from environment to food, chemicals, and mining & minerals. As the OEM for many of the world's leading brands, we have the solutions and services to transform your business to meet tomorrow's changing demands – wherever you are and whatever your separation challenge. **Ask your separation specialist!**

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